REPORT

OF THE

Indian Tariff Board

OF THE

GLUCOSE INDUSTRY

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PERSONNEL OF THE BOARD

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REPORT ON THE GLUCOSE INDUSTRY

Reference to the Board.

1. The case of the glucose industry was referred to the Board for investigation into its claim for assistance or protection by the Government of India, Department of Commerce, in their Resolution No. 218-T(55)/45, dated the 16th February 1946. The terms of reference are the same as for the starch industry and are reproduced below :—

"In the case of each industry the Board will, after such examination as it considers necessary, report whether the industry satisfies the following conditions :—

(1) that it is established and conducted on sound business lines ; and

(2) (*a*) that, having regard to the natural or economic advantages enjoyed by the industry and its actual or probable costs, it is likely within a reasonable time to develop sufficiently to be able to carry on successfully without protection or State assistance ; or

(*b*) that it is an industry to which it is desirable in the national interest to grant protection or assistance and that the probable cost of such protection or assistance to the community is not excessive. Where a claim to protection or assistance is found to be established, i.e., if condition (1) and condition (2) (*a*) or (*b*) are satisfied, the Board will recommend—

(*i*) whether, at what rate and in respect of what articles, or class or description of articles, a protective duty should be imposed ;

(*ii*) what additional or alternative measures should be taken to protect or assist the industry ; and

(*iii*) for what period, not exceeding three years, the tariff or other measures recommended should remain in force.

In making its recommendations the Board will give due weight to the interests of the consumer in the light of the prevailing conditions and also consider how the recommendations affect industries using the articles in respect of which protection is to be granted. Since relief, to be effective, should be afforded without delay, the Board is requested to complete its enquiries, with all possible expedition and to submit a report as soon as the investigation of the claim of each industry is concluded."

Application for protection.

2. Messrs. Rampur Maize Products, Ltd., Rampur (Rampur State), made a representation to the Commerce Department, Government of India, on the 13th July 1945, asking for provisional protection to the glucose industry. Later, they followed it up with another representation on the 7th August 1945, wherein they supplied information about their capacity, actual production, quality of their product, prices of the imported and indigenous glucose, etc., as a result of which Government referred the case to the Board.

Method of inquiry.

3. The Board issued a Press Communique on the 19th February 1946, inviting associations, firms and persons interested in this industry who desired their views to be considered by the Board to submit their representations by the 31st August 1946. This was

followed up by issue of a comprehensive questionnaire. A list of the firms or bodies to whom the questionnaire was issued and of those which replied to it is given in Appendix I. Dr. Nazir Ahmad, a Member of the Board, visited the Rampur factory on the 22nd October 1946. The oral evidence of representatives of producers, consumers and importers was taken at Bombay on the 7th and 21st November 1946. A list of the witnesses examined is given in Appendix II.

History of the Industry.

4. There was no indigenous production of glucose before the war. It was only in 1944 that glucose was produced in India on a commercial scale by three factories, viz. (1) Rampur Maize Products, Ltd., Rampur, (2) Bharat Starch & Chemicals Ltd., Abdullapur (Punjab) and (3) The Anil Starch Products, Ltd, Ahmedabad. In fact, the glucose industry in India forms a part and parcel of the starch industry.

Uses.

5. Glucose is used largely in various fermentation processes such as the manufacture of alcohol, vinegar, etc., and in making jams, confectionery, syrups, wines and caramel, and in the paper, textile and leather industries. 'Crystal' glucose is used in medicine and as food for infants and invalids. Liquid glucose can be used as a substitute for solid glucose and in addition it is also consumed in jute, cotton, rayon and silk factories.

Imports.

6. Separate import figures are not given in the "Annual Statement of the Sea-borne Trade of British India", glucose not being classified as a separate item. We are of the opinion that in future glucose should be shown as a separate item in the "Annual Statement of the Sea-borne Trade" and in the "Census of Production" so that India's requirement of this commodity may be known more accurately than at present. Messrs. Corn Products Co. (India) Ltd. who are the principal importers of glucose have given their imports of glucose during the past ten years as follows :—

Year	Quantity (Barrels)	Quantity (Tons)	
1936	5,145	1,608	approx.
1937	6,765	2,114	
1938	8,204	2,570	
1939	8,299	2,593	
1940	7,559	2,362	
1941	4,995	1,543	
1942	4,091	1,278½	
1943	1,500	469	
1944	250	78	
1945	1,252	390½	
Total	48,060 barrels	= 15,006 tons.	

(One barrel = 700 lbs. approx.)

Their average annual imports over the past ten years including the war years thus equal 4,806 barrels or approximately 1,500 tons.

Estimated Indian demand.

7. We can form a rough estimate of the demand in the next few years on the basis of the imports during the years immediately preceding the war. It will be seen from the figures given in paragraph 6 that 28,413 barrels containing 8,885 tons of glucose were imported between 1936 and 1939, giving an average of about 2,200 tons per annum. The future estimated demand may therefore be taken as 2,500 tons per annum, a view which is accepted by both the industry and the importers.

Domestic production.

8. The three starch factories, namely, (1) Messrs. Rampur Maize Products Ltd., Rampur, (2). The Anil Starch Products Ltd., Ahmedabad, and (3) Bharat Starch and Chemicals Ltd., Abdullapur, Punjab, which have already installed equipment for making glucose, are reported to have a productive capacity of 3,600 tons per annum, while the other starch factories can also install the necessary equipment provided (*i*) there is demand and (*ii*) the raw material—starch in this case—is available. However, for various reasons, the chief being the shortage of starch and non-availability of activated carbon in wartime, the actual production of glucose by these factories has been much below their rated capacity as will be seen from the following statement :—

	Quantity of glucose syrup (in tons)			
	1943	1944	1945	1946
1. Rampur Maize Products, Ltd ..	.. ....	....	180	260
2. Anil Starch Products, Ltd. ..	.. 12	159	83	....
3. Bharat Starch, Ltd. ..	.. ....	87·27	83·1	....
Total ..	12	246·27	346·1	260

Process of manufacture.

9. The main raw materials for the manufacture of glucose are starch and hydrochloric or sulphuric acid. There are two types of glucose, syrup and solid. The manufacture of the first is a comparatively simple process, and is especially easy for a starch factory which is conversant with the chemical treatment of starch. The actual process consists in heating starch mixed with water in the presence of a small quantity of acid under pressure, when it breaks down chemically into simpler substances. The chemical action is known as hydrolysis. If this process of hydrolysis is carried through to completion, the final product is dextrose. If the action is interrupted, glucose syrup is obtained. When the conversion reaches the syrup point, the heating is stopped, and the liquid is taken over in a tank, where it is neutralised with mild alkali. The syrup is then filtered and is evaporated under vacuum to proper consistency. The Indian product is marketed generally in syrup form packed in drums. The solid glucose can be further sub-divided into two groups, viz., corn sugar and pure dextrose. In the manufacture of dextrose, the hydrolysis started for syrup glucose is carried to completion. The resultant liquor is concentrated and the dextrose is crystallised by seeding, centrifuged and dried as in the sugar industry.

Quality of the indigenous product.

10. It is stated by all the consumers of indigenous glucose from whom we have received replies that the indigenous glucose is inferior in quality as compared with the imported glucose. The indigenous glucose is cloudy and gives varying tints. It has been stated that the same output of confectionery is not obtained with the Indian glucose as with the imported glucose. The producers admitted the existence of these defects. They pointed out that the process of manufacture adopted by them is the correct one, but the results were not satisfactory because of the shortage of some essential raw materials in wartime such as activated carbon. The Board is satisfied with the contention of the industry and expects that, as time passes, more experience is gained and the difficulty regarding some raw materials disappears, the local product will come up to the standard of the imported product, there being nothing inherently defective or wanting in the potentiality of the industry in India.

Existing rate of duty.

11. Extract from the Customs Tariff Schedule.

Item	Name of article.	Nature of duty.	Standard rate of duty.	Preferential rate of duty if the article is the produce or manufacture of.			Duration of protective rate of duty.
				U. K.	A. Br. colony.	Burma.	
21(2)	All sorts of food not otherwise specified.	Revenue	30 per cent. *ad valorem.*	..	..	12 per cent. *ad valorem.*	
28	Chemicals, Drugs, and Medicines, all sorts not otherwise specified.	Preferential Revenue.	36 per cent. *ad valorem.*	24 per cent. *ad valorem.*	24 per cent. *ad valorem.*	12 per cent. *ad valorem.*	

Ordinary glucose comes under item 21(2) and is subject to a 30 per cent. duty, whereas the pharmaceutical glucose falls under item 28 and is subject to a duty of either 24 or 36 per cent. according to source of supply.

Permission to factories to manufacture limited quantities of glucose.

12. Under the Cotton Textiles Sizing and Filling Control Order, factories which are allowed a certain quota of maize by the Textile Commissioner are forbidden to prepare any glucose. The object of this restriction is that since maize is scarce and the food position in the country is acute, the factories should not divert any of the food grains to any non-essential products. They were allowed a certain quantity of maize for starch as the latter was regarded as essential for the textile mills which produced an article of necessity only next to food for the people. These considerations are important even now, but we are of the opinion that in the interest of the healthy development of the starch industry, it would be desirable to allow the starch factories to convert a certain percentage of their starch into glucose. This would enable the starch factories to keep the glucose plants working for at least a part of the year and to carry on developmental

work, so that when the position regarding the supply of raw materials becomes easy, they would be able to bring down the cost of manufacture of starch. The preparation of a certain quantity of glucose is essential to place the starch industry on a strong competitive footing with foreign manufacturers and should therefore be regarded as an integral part of the scheme of protection and encouragement of the Indian starch industry. Another point in favour of this view is that glucose is a food product and therefore its manufacture should be fostered in the general interest of the health of the people. We recommend that the factories equipped with glucose manufacturing machinery should be allowed to convert a maximum of 10 per cent. of their starch production into glucose until the maize position becomes easier when the matter should be reconsidered and the restriction on conversion of starch into glucose relaxed.

Cost of production and landed cost.

13. The Board examined the reports of the Cost Accounts Officer in respect of Rampur Maize and Anil Starch. Mainly on account of the difficulty of getting an adequate supply of maize, and for other reasons, the factories were never able to reach their maximum output of glucose. On the assumption that enough maize will be available to enable them to produce 500 tons of glucose in the case of Anil and 1,000 tons of glucose in the case of Rampur, the cost of production will come to about Rs. 44 per cwt. in the case of Anil and Rs. 54 per cwt. in the case of Rampur. In the absence of reliable data, we were not able to examine the working costs of these two factories so as to ascertain whether the costs achieved by Anil could not be achieved by Rampur also. On account of the uncertainty in the supply position of maize, no useful purpose will be served by going into a detailed examination of the costs of production of syrup glucose by these factories at this stage. As against the cost figures mentioned above, the landed cost of imported Canadian glucose (syrup) is reported to be Rs. 56 inclusive of 30 per cent. revenue duty. What the landed cost of glucose imported from the U. S. A. will be it has not been possible to ascertain. We have, however, been told that it is likely that the U. S. A. price will be less than the Canadian price. Thus on the question of landed cost also, sufficient data are not available at this stage to enable us to express a definite opinion as to how far imported glucose will compete with the indigenous manufacture.

Action recommended.

14. It will be seen from the observations contained in the preceding paragraph that it is difficult at this stage to arrive with any degree of accuracy at either the cost of production of syrup glucose in India or the landed cost of imported glucose. Inspite of the uncertainty in these two matters, it is, in our opinion, necessary to take some action to give the glucose industry a reasonable chance to develop. There is another important consideration to be borne in mind. The development of the glucose industry is desirable in the interest of the development of the starch industry itself. It is only by developing by-products like glucose that the starch industry would in the long run be in a position to reduce its own manufacturing costs. For these reasons, we recommend that the present revenue duty of 30 per cent. should be converted into a protective duty to be in operation till the 31st March 1950. Our usual practice in recommending protection to other industries has been to suggest the application of section 4 (1) of the Indian Tariff Act with a view to offsetting the effect of a fall in the price of imports. We are advisedly not recommending this course in the case of glucose for the reason that, as has been mentioned above, it has not been possible to ascertain with any degree of accuracy either the cost of production or the landed cost. If there is a phenomenal fall in the landed cost of imported glucose, it would be open to the glucose manufacturers to approach the

Government again for a review of the case. The action that we now recommend is only a recognition of the fact that the development of the glucose industry is an integral part of the development of the starch industry for which we have recommended protection. If and when the glucose industry comes up for reconsideration, it would be the duty of the glucose manufacturers to show that they have succeeded in producing a product which would stand comparison with the imported variety. We are making this observation deliberately in view of the fact that the Indian manufacturers have to go a long way before their product could be considered to be satisfactory from the point of view of quality.

Summary of conclusions and recommendations.

15. Our conclusions and recommendations are summarised as below :—

(1) Glucose should be shown as a separate item in the "Annual Statement of the Sea-borne trade of India" (paragraph 6).

(2) The demand for glucose in the next three years is estimated at 2,500 tons per annum (paragraph 7).

(3) The productive capacity of the Indian factories is stated to be 3,600 tons per annum, although the maximum actual production in 1945 was only 346·1 tons (paragraph 8).

(4) The indigenous glucose is inferior in quality as compared with the imported glucose though there is no inherent reason why the quality should not improve with experience and increased production (paragraph 10).

(5) In the interest of the healthy development of the starch industry it would be desirable to allow the starch factories to convert a maximum of ten per cent. of their starch production into glucose until the maize position becomes easier when the matter should be reconsidered and the restriction relaxed (paragraph 12).

(6) The estimated cost of production, including profit in one of the factories is about Rs. 44 per cwt. whereas it is Rs. 54 in the other factory. The landed cost of imported glucose (Canadian) is reported to be Rs. 56 including 30 per cent. revenue duty. It has not been possible to ascertain the landed cost of U.S.A. glucose which however is expected to be below the Canadian price (paragraph 13).

(7) The present revenue duty of 30 per cent. should be converted into a protective duty and this duty should remain in force till the 31st March 1950 (paragraph 14).

Acknowledgments.

16. The Board's thanks are due to Mr. V. H. Mumford, Cost Accounts Officer, Dr. V. V. Kelkar, the Board's Technical Adviser and Rai Sahib S. C. Aggarwal, Deputy Secretary and Dr. Rama Varma, Assistant Secretary of the Board for the help and assistance rendered by them in the course of this inquiry.

SHANMUKHAM CHETTY—President.

C. C. DESAI—Member-Secretary.

NAZIR AHMAD—Member.

H. L. DEY—Member.

S. C. AGGARWAL—Deputy Secretary.

Bombay, 16th January 1947.

APPENDIX I.

List of the firms or bodies to whom the questionnaire was issued and of those which replied to it.

I. *Producers*—

1. Messrs. Rampur Maize Products Limited, Rampur State.
2. Bharat Starch and Chemicals Limited, 5 Royal Exchange Place, Calcutta.
3. The Anil Starch Products Limited, Ahmedabad.

Note.—A Joint Representation from all these three producers was received by the Board.

II. *Consumers*—

1. Messrs. Parry & Co., Ltd., Post Box No. 12, Madras.
2. Messrs. Pharmaceutical and Allied Manufacturers and Distributors, Post Box No. 214, Bombay.
3. Parle Products Manufacturing Company, Near Kalbadevi Post Office, Bombay.
4. Britania Biscuit Company, Bombay.
5. J. B. Mangharam & Sons, Karachi.

Of these, the first four replied.

III. *Importers*—

1. The Corn Products (India) Ltd., Post Box 994, Bombay.
2. The Sizing Materials Co., Ltd., Post Box 15, 137 Esplanade Road, Bombay.
3. Boots Pure Drug Co., Ltd., Nicol Road, Ballard Estate, Bombay.
4. P. M. Hutheesing & Sons, Ahmedabad.

Only the first two in this list replied.

APPENDIX II

List of persons who attended Oral Evidence.

I. *Producers*—

1. Mr. Kasturbhai Lalbhai, representing Anil Starch Products, Ahmedabad.

2. Dr. Van Gelder, representing Rampur Maize Products, Rampur.

II. *Consumers*—

1. Mr. A. E. Jones, representing Binny and Company, Madras.

2. Mr. Bracewell, representing Kohinoor Mills, Dadar, Bombay.

3. Mr. C. J. Soneji, representing E. D. Sassoon Group Mills, Bombay.

4. Mr. V. A. Ajagaoker, representing the Standard Mills, Bombay.

III. *Importers*—

1. Mr. Salzer, representing Corn Products (India) Limited, Bombay.

2. Mr. Stott, representing Sizing Material Co., Limited, Bombay.

IV. *Officials and Others*—

1. Mr. Dharma Vira, O.B.E., I.C.S., Textile Commissioner, Government of India.

2. Mr. S. W. Shiveshwarkar, M.B.E., I.C.S., Deputy Secretary to the Government of India, Department of Industries and Supplies, Bombay.

3. Mr. H. D. Doongaji.

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